

U. of Chicago
PROGRESS REPORT

NASA Research Grant NGR-14-001-060

27 December 1965

As anticipated in the original outline of this research, the first six months of the above grant have been spent in construction of the appropriate equipment for the experiment. The construction has principally followed two major lines, electronics and optical-mechanical.

The optical-mechanical work has been done entirely in the shops here at the Yerkes Observatory. The final form of the system is very close to that originally outlined in the grant proposal, utilizing a 6 x 8-inch replica reflection grating and 6-inch diameter on axis parabolic optics within the spectrometer and a 10-inch telescope primary. Special photomultipliers have been supplied by I.T.T. and have been found to be quite satisfactory. The optical-mechanical system was completed in early October, 1965. Photographs of the system are enclosed herewith and are largely self-explanatory, when combined with the original grant proposal. The unit pictured goes onto an existing telescope mounting which was brought into the Yerkes shop and rebuilt.

The major problem has been the electronics components. It was decided that part of the construction funds saved by the construction of the optical-mechanical parts in our own shops would be used to make the electronics system as refined as possible, compatible with reliability. It was decided to make a semi-automatic unit based around the stepping motor that controls the grating and hence the wavelength. The appropriate unit was ordered from the major supplier of this apparatus, Superior Electric. Unfortunately, their promised delivery time of six weeks was extended to four months, and the assembled indexing unit was not delivered until a few weeks ago. Very similar experiences were encountered with the delivery of the 100 megacycle scalars, necessary for the high counting rates to be expected with the system. Delivery of the last component of the electronics system, which includes an IBM typewriter readout, is promised for this week and the firm doing the system integration (Marquette Associates of Milwaukee) promises delivery during the middle of January. The system should go into operation immediately after the delivery of the final components.

FACILITY FORM 602

N67-81185
(ACCESSION NUMBER)

2
(PAGES)

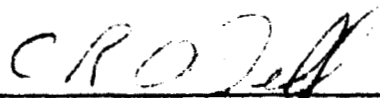
CR 69943
(NASA CR OR TMX OR AD NUMBER)

(THRU)

(CODE)

One other major step relevant to this program is the decision by the University of Chicago to provide a new building-laboratory facility for this experiment. The enclosed photographs - the latest being made one month ago - and the artist's drawing indicates the state of progress and the final appearance of the building. The building will be a two dome structure, the south dome being used for a photographic Schmidt telescope, with an electronics laboratory between the domes. The building is designed for use with experiments of this nature that involve much equipment development and experimentation. The new dome will give an excellent horizon for work on comets, since it reaches the tops of all surrounding trees. The costs for the construction of the building are being borne by the University and reflects the backing provided by the University to such projects as this. Needless to say, the building is permanent and will be available for use on this project for several years.

In summary I can report that satisfactory progress is being made on this grant with the development of the necessary equipment being in its final stages. The timescale of the development has been dictated by the availability of the components, and completion will occur during January, after which time the scientific efforts of the program will begin.



C. R. O'Dell
Principal Investigator

CRO:bp

